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ABSTRACT

This report presents and discusses the findings of a study, undertaken at the Education Library of Wayne State University in 1977, that tested library user acceptance of a selected group of current journals in a microfiche format. Problems and conditions of the study, the environment of the Education Library, and methodology are considered; data, in the form of statistical tables and charts, are provided for the three consecutive academic quarters of the study. Library users are categorized as undergraduate, graduate, faculty, and other. (JD)

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TECHNICAL PAPER NO. 10

ACCEPTABILITY OF MICROFICHE
COPY IN LIEU OF PAPER
COPY OF CURRENT
JOURNALS

"PERMISSION TO REPRODUCE THIS
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TO THE EDUCATIONAL RESOURCES
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by

Vern M. Pings

&

Lothar Spang

Detroit
May 1979

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INTRODUCTION

Libraries exist to insure the continuity of information transfer. Our society depends on the efficiency with which we transfer information for all aspects of our living. We keep records of all kinds for many different reasons. It is estimated that the federal government alone stores some 20 million cubic feet of records. It was the printing press that made it possible to create multiple copies of records, but the cost of storing, binding and retrieving paper is leading us to change to microformats.

Academic librarians even though they have purchased a great deal of material in microformat seem reluctant to organize their agencies to take full advantage of the efficiencies that could result in information transfer using microformats. Nutter notes that most of the evaluation studies on user acceptance of microformats relate to commercial or governmental applications. (1) Perhaps the most cogent review of librarians' reluctance to promote the use of microform was written by Salmon in 1972. In spite of many predictions about the utility of microformat "the millennium has not arrived, equally obviously, I think it is not about to. By and large, microforms are still limited to specialized usage in research libraries: as substitutes for crumbling and unwieldy volumes of newspapers and for out-of-print material not available elsewhere". (2) Two years later Salmon admits that several positive developments occurred which might alter the pessimism of librarians. New standards and new machinery make microformats easier to use. This also reflects Wooster's earlier view in 1970 that microfiche was ahead of its time when he remarked that we should "learn to live with it until something better comes along--and it probably will". (3)

PROBLEMS AND CONDITIONS

Holmes argued in his study for the Association of Research Libraries that it was the factors in the academic environment, that is, such things as attitudes of librarians to microformats, to physical facilities and to the undependability of equipment, which prevented the full use of microfor-

mats by the users of academic libraries. (4) Yet Green some years later in his study of user attitudes toward microforms in the academic environment found that there seems little relationship between attitude and frequency of use. Further, although "faculty under 30 seem to have more positive microform attitudes, frequency of use of microforms is relatively independent of age". (5) Although computer output microformatting was technically possible to produce from an oscilloscope beam in 1936, it is only recently that the computer has come to be used as a new kind of printing press. The data output grew so rapidly during 1973 that the paper industry was forced to reallocate paper resources by means of increasing prices. This brought a spurt in the use of COM. Ross reports that already by 1974 16% of computer output had been produced in COM. (6) More and more librarians have begun to produce their own records in COM. The economic pressure will no doubt continue for the increased use of microformats in distributing and retrieving information.

There are limitations in the process of information transfer, some of them inherent in the process itself, others due to academic traditions, and still others imposed for political and economic purposes. There does not seem to be any question that the amount of material to be published and distributed in microformat will increase. The question can be asked why microformats have not been considered to be a primary format of the scholarly record by academic research libraries. Is it the format and the instrumentation needed to use microforms, or is it user reluctance, and the bureaucratic inertia of research libraries?

A study was undertaken from March through December 1977 at the Education Library at Wayne State University with the assistance of University Microfilms International (UMI) to test the consequences of distributing published information in a microfiche format. There were four conditions investigated:

1. The acceptance of the microfiche by library users of a selected group of journals;

2. The acceptability of a specific complement of equipment to provide alternate paper copy for journal articles;
3. The changes necessary in work assignment and work flow of library staff to supply current journals in microfiche copy and to provide a "take away" copy, either paper or microfiche, within acceptable time conditions as perceived by user;
4. The recording of copying by title, number and format of copy (paper or fiche) by automation equipment in anticipation of the copyright law effective in January 1978.

This report will discuss only the outcome with respect to the user acceptance under the conditions of the test. An additional report is in process to review the work flow requirements, the efficacy of the automatic equipment, and the costs in supporting the conditions of the test.

THE ENVIRONMENT

The Education Library at Wayne State University contains approximately 300,000 volumes plus 215,000 micropublications, the major portion of the latter is the ERIC microfiche collection. Obviously, the major users of the Education Library are the students and faculty of the University, but as the only resource research collection of education literature in a metropolitan area of four and a half million, the Education Library provides services to the professional community of the area. Wayne State University is an urban institution, not a "campus" school. Most of the students and others who use the facilities at the University have a round trip commutation of from 10 to 90 miles. The Education Library in its physical arrangement and procedures tries to accommodate to this situation in several ways, three of which are important to this study. A large reserve collection is maintained which includes the current unbound issues of 470 journal titles and a three year file of the 75 most heavily used of these titles. Secondly, because of the extensive use of the ERIC microfiche collection a complement of equipment with a service organization has been maintained that has functioned

dependably for eight years. Finally, self service and mediated copy service is available, paper to paper, fiche to paper, and fiche to fiche. While the collection of microformats has been confined to materials that are not ordinarily available in paper copy, the Education Library is well suited to test the acceptability of microfiche copies of heavily used materials.

METHOD

Sixty-seven titles were selected from "Serials in Microform" that were published in microfiche and which were on reserve in the Education Library and considered heavily used titles. (7) A two year "set" of microfiche was prepared for each title. As new issues of the journal were published a fiche copy was added to the set. The test went through three academic quarters, spring, summer and fall. Three "acceptance" conditions were planned.

1. In the Spring quarter when a user requested one of the 67 journal titles at the reserve desk, the user was provided with a microfiche copy with a written explanation of the study. (See Appendix 1.) If the user rejected the microfiche, the user was asked to indicate the reason(s) and was then supplied with the paper copy. The first component was designed to disturb the existing condition of journal use as little as possible. Since there was no public record of which titles were available on microfiche, the user could not predict which request would be supplied as a microfiche until repeated usage provided the clue.
2. The second component, begun in the summer quarter, was planned to reduce the ease of the access of the paper copy as compared to the microfiche copy. All paper copies were removed to another reserve desk in an adjoining but connecting library building, a little over a 200 feet away. If

the user refused the microfiche copy, reasons for rejection were requested and then the user was informed of the availability of the paper copy at the other reserve desk. (The explanation of the study and the questionnaire were appropriately revised.)

3. When the study was planned, it was decided that the third component was to be implemented only if the data indicated high user resistance to the microfiche; that is, upon refusal of the microfiche the user was to be informed that the paper copy would be made available the following day. The alternative was to have a paper copy made from the fiche using the on demand service. By the end of the first half of the summer quarter it was determined that little new data would be gathered if the third component were instituted. The third quarter was used to check the data gathered in the earlier quarters and to test the adequacy of the copying services and the equipment.

As noted above the report on the part of the study of the use of copying and tabulating equipment is being prepared separately. It is perhaps important to explain the options for copying to reveal what effect this might have had on the acceptability of microfiche. Before the study began the Education Library had the following copy services available: (i) self service paper to paper coin operated copiers at 5¢ per exposure; (ii) self service microformat to paper coin operated copiers at 10¢ per exposure; (iii) mediated fiche to fiche copying at 30¢ per fiche with a 24 hour delivery time. During the study an on demand mediated service was provided for microfiche copying using a Bruning OP-11 vesicular microfiche duplicator and a Xerox 970. The cost to the user was 5¢ an exposure for paper copies and 30¢ for a fiche copy. The procedure required the user to prepare a request indicating fiche coordinates for paper copying. The request with the fiche was taken to a copy center (about 40 feet from the reserve desk). The cost for copying was calculated and the user told to obtain a receipt from a fees payment desk

about 100 feet from the copy center. In all but a few instances the paper or fiche copy was ready for pickup by the time the user returned from the Fees Desk.

FINDINGS

During the spring quarter 24% of the requests for periodical titles made at the reserve desk were of the test titles. (See Table 1.) The percentage rose to 49% in the summer quarter. (The spring quarter's use figures are not comparable since some titles lacked the full two year back file and in some instances the filming of the current issues had not been accomplished.) This would indicate that the choice of titles for the test from the 470 on reserve were the most heavily used. The requester could not predict which titles would be delivered in paper or fiche copy unless the titles had been previously requested and a fiche copy was obtained. The paper copy was always supplied if the fiche copy had not been received.

When the choice was available to receive a paper copy immediately, over 50% of the requesters during the spring quarter used the microfiche. (See Table 2.) Some of the users of the Education Library undoubtedly previously used the microfiche of the ERIC file and were acquainted with microfiche but for many it was a new experience. In the summer quarter when the inconvenience of going to another desk to obtain the paper copy was presented, the acceptance rate rose to 90%. By the fall quarter the willingness to accept the microfiche copy rose to 95%. If the study had progressed as planned where the user would have had to return the next day to obtain the paper copy, undoubtedly the acceptance would have been even higher.

The University community as categorized in this study was equally willing to use microfiche. The number of faculty requesting these high use journals was however too small to make any significant statistical comparisons. Presumably faculty have other access to these high demand periodical titles. In any event, there did not appear to be any more

TABLE I

Requests for Periodicals on Reserve
at the Education Library
April - December 1977

	Week of quarter	Total requests	Paper copy supplied	Fiche copy supplied	% Supplied in fiche
Spring Quarter	2	404	333	71	15
	3	325	240	85	26
	4	289	218	71	24
	5	301	228	73	24
	6	273	195	78	29
	7	328	202	126	38
	8	273	170	103	38
	9	306	234	72	24
	10	182	156	26	14
	11	89	69	20	22
	Quarter break	248	236	12	5
Total		3,018	2,281	737	24
Summer Quarter	1	300	149	151	50
	2	341	176	165	48
	3	255	150	105	41
	4	237	106	131	55
	5	176	72	104	59
	6	104	63	41	39
	7	106	43	63	59
	8	67	28	39	58
	9	45	18	27	60
	10	43	17	26	60
	11	41	18	23	41
	Quarter break	84	70	14	17
Total		1,799	910	889	49
Fall Quarter	1	267	153	114	43
	2	287	173	114	40
	3	269	153	116	43
	4	287	174	113	39
	5	273	167	106	39
	6	250	134	116	46
	7	218	149	69	32
	8	256	176	80	31
	9	185	148	37	20
	10	208	72	136	65
	11	114	38	76	66
	Quarter break	7	7	-	-
Total		2,621	1,544	1,077	41

TABLE 2
Requests Supplied for Periodicals in Microfiche
Format and Rate of Acceptance
at the Education Library
April - December 1977

	<u>Total Requests Supplied</u> (1)	<u>% of Use</u> (2)	<u>No. Accepted</u> (3)	<u>% Accepted</u> (4)	<u>No. Refused</u> (5)	<u>% Refused</u> (6)
<u>Spring Quarter</u>						
Undergraduate	172	23	96	56	76	44
Graduate	450	61	246	55	204	45
Faculty	33	5	16	48	17	52
Other	82	11	35	43	47	57
Total	737	100	393	53	344	47
<u>Summer Quarter</u>						
Undergraduate	102	11	93	91	9	9
Graduate	686	79	611	89	75	11
Faculty	29	3	26	89	3	11
Other	72	8	62	86	10	14
Total	889	100	792	89	97	11
<u>Fall Quarter</u>						
Undergraduate	280	26	267	95	13	5
Graduate	617	57	582	94	35	6
Faculty	22	2	22	100	-	-
Other	158	15	146	92	12	8
Total	1,077	100	1,017	94	60	6

reluctance by faculty to use microfiche than students. The one group that was less accepting of the microfiche copy, albeit by only a few percentage points, were those who were not members of the University community. Since this group only constitutes a little over 10% of the use of the collection and only a small percentage of these show reluctance to use microfiche, it is questionable whether the preferences of this group would be an important element in evaluating the data of the study given that the Education Library's responsibilities lie first with its own community.

Overall one third of the microfiche issued resulted in the user ordering a paper copy to be produced. (See Figures 1-3.) In this environment it was not feasible to count how many facsimile copies were made from the paper copy of journals issued since the copying was entirely self service. The conditions of the study may have caused a higher rate of copying from microfiche because the copy provided was a xerographic copy rather than the dry silver paper copy that could be produced from the paper issue of the title through the self service coin operated machines. Even if this were a factor, it could not have had an undue influence because the variation in orders for paper copies between test periods was comparatively large. Other factors must have been at work. (See Table 3.) In fact the reverse might have been true since one third of the individuals who refused a microfiche issue in the spring and summer indicated that they wished to make their own copy rather than use the mediated service. (See Table 4.) There does not appear to have been any discernable pattern among the categories of users in the number of orders for paper copies.

Six possible choices were given a user who refused the microfiche. Space was provided to give additional comments. (See Appendix 1.) Although there were 501 times the microfiche copy was refused, there were 758 "reasons" given for the refusal. Obviously, individuals had more than one objection to the use of microfiche. Although there were variations of response from quarter to quarter, taking the responses as a whole, no pattern emerges among the four categories of users. The reasons they gave were much the same throughout. (See Table 5.) The four "dislikes" most

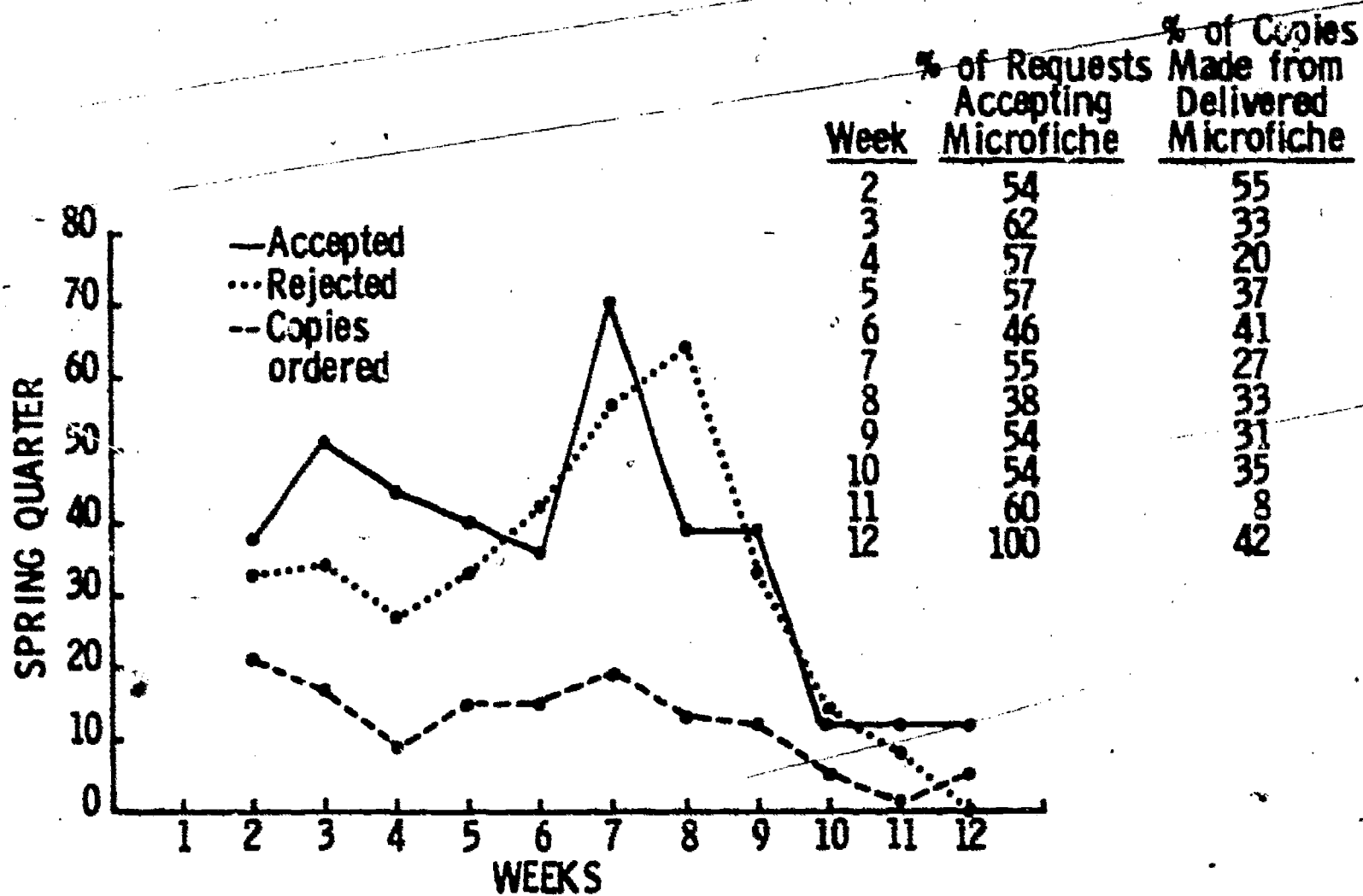


FIG. 1 NUMBER OF REQUESTS FOR JOURNALS SUPPLIED IN MICROFORMAT APRIL TO JUNE 1977

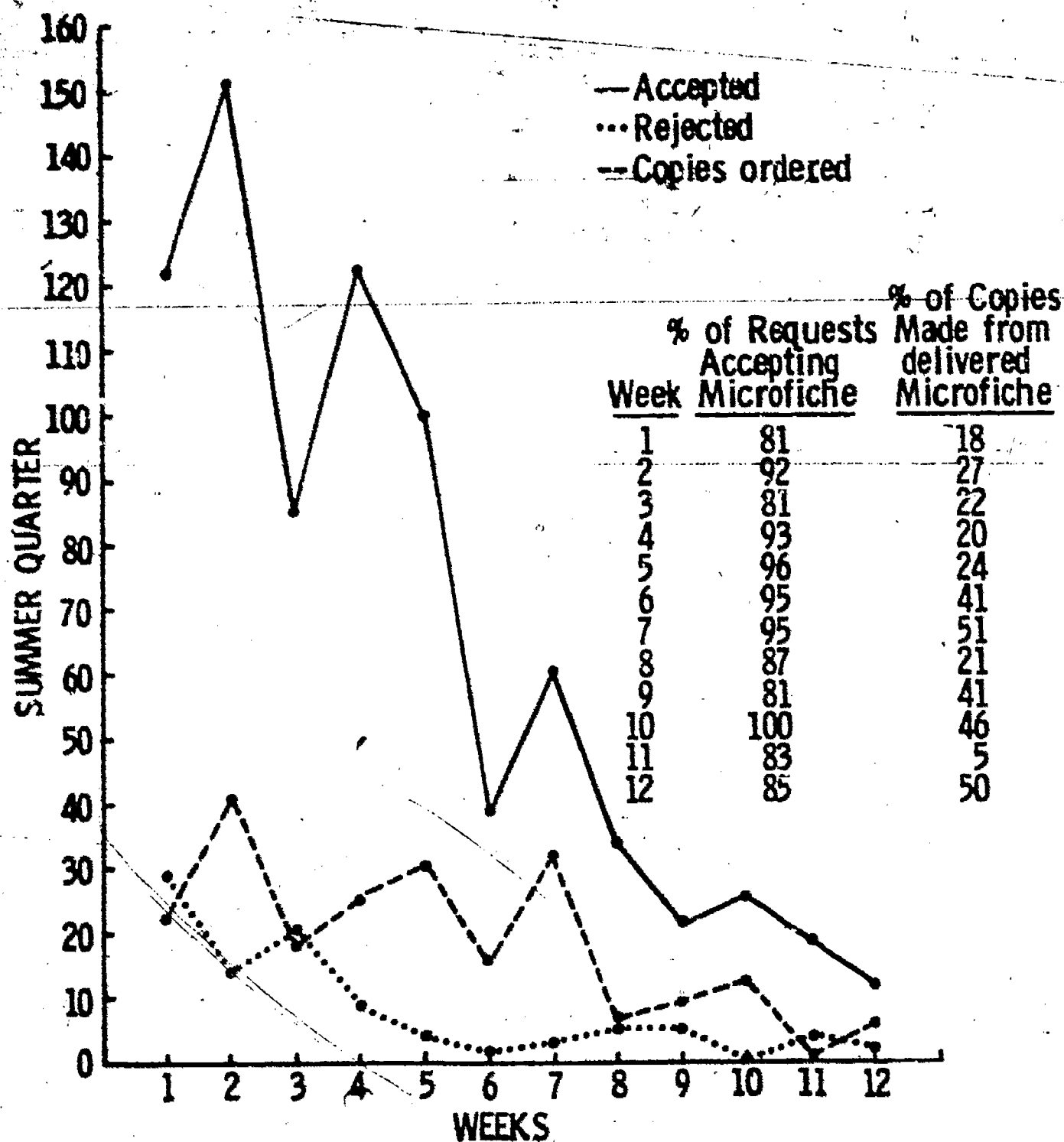
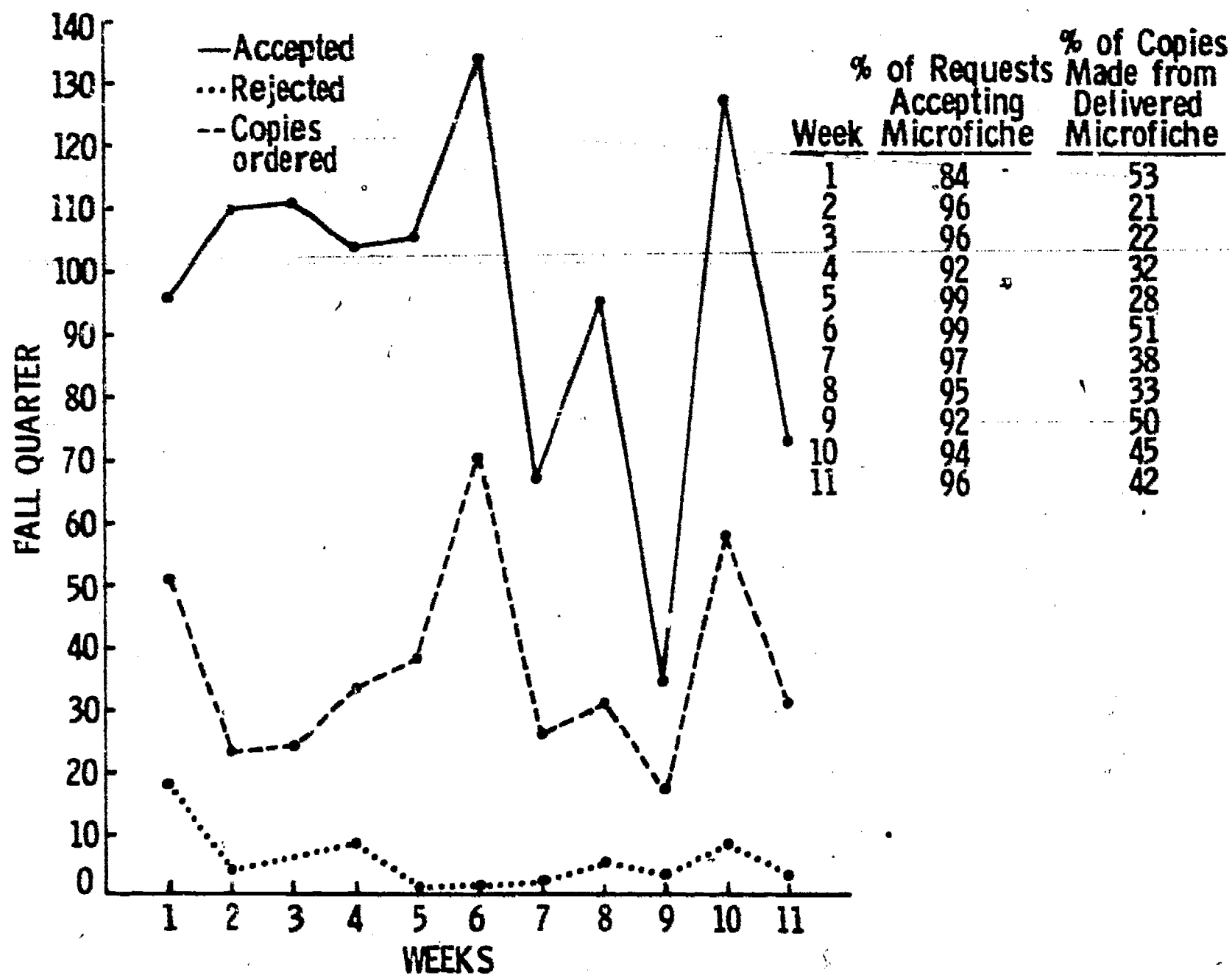


FIG. 2 NUMBER OF REQUESTS FOR JOURNALS SUPPLIED IN MICROFORMAT JULY TO SEPTEMBER 1977



(12)

FIG. 3 NUMBER OF REQUESTS FOR JOURNALS SUPPLIED IN MICROFORMAT OCTOBER TO DECEMBER 1977

TABLE 3

Percentage of Paper Copies Made From
Microfiche Issued From Reserve Desk
at the Education Library
April - December 1977

	<u>Fiche Accepted</u>	<u>Percent Copies</u>	<u>Percent Copies</u>
<u>Spring</u> \			
Undergraduate	96	29	30
Graduate	246	90	37
Faculty	16	1	6
Other	35	12	34
<u>Total</u>	<u>393</u>	<u>132</u>	<u>36</u>
<u>Summer</u>			
Undergraduate	93	27	29
Graduate	611	165	27
Faculty	26	12	46
Other	62	15	24
<u>Total</u>	<u>792</u>	<u>219</u>	<u>28</u>
<u>Fall</u>			
Undergraduate	267	104	39
Graduate	582	219	38
Faculty	22	6	27
Other	146	73	50
<u>Total</u>	<u>1,017</u>	<u>402</u>	<u>40</u>
<u>Grand Total</u>	<u>2,202</u>	<u>753</u>	<u>34</u>

TABLE 4

Reasons for Rejecting Microfiche
Copies of Periodicals at the
Education Library
April - December 1977

	Reason #	Under- graduate #	% Re- sponse %	Grad- uate #	% Re- sponse %	Fac- ulty #	% Re- sponse %	Other #	% Re- sponse %	Total #	% Re- sponse %
<u>Spring</u>	1	20	26	55	27	13	76	16	34	84	24
	2	12	16	29	14	8	47	6	13	55	16
	3	22	29	58	28	6	35	13	28	99	29
	4	27	35	70	34	4	24	10	21	111	32
	5	30	40	63	31	5	29	14	30	112	32
	6	7	9	13	9	2	12	6	13	33	10
	7	5	7	8	4	3	18	1	2	17	5
<u>Summer</u>	1	1	11	29	39	1	33	3	30	43	44
	2	3	33	18	24	-	-	2	20	23	24
	3	-	-	36	48	1	33	5	50	42	43
	4	3	33	25	33	-	-	1	10	29	30
	5	5	56	23	31	-	-	3	30	31	32
	6	-	-	9	12	1	33	-	-	10	10
	7	1	11	6	8	-	-	-	-	7	7
<u>Fall</u>	1	1	8	8	23	-	-	-	-	9	15
	2	3	23	8	23	-	-	-	-	11	18
	3	2	15	6	17	-	-	-	-	8	13
	4	5	38	1	3	-	-	2	17	8	13
	5	2	15	4	11	-	-	3	25	9	15
	6	3	23	8	23	-	-	2	17	13	21
	7	-	-	4	11	-	-	-	-	4	6

*Reason:

1. Too troublesome to use microfiche reader
2. Too difficult to read
3. Inconvenient for my study habits
4. Too time consuming to use
5. I intend to copy the article myself from the paper issue on the library copiers
6. I have rejected the microfiche previously and do not wish to participate
7. Other...

Percentage calculated from number of individuals (See Table 2, column 6) rather than number of times response was given checked by category of user.

TABLE 5

Summary of Reason Microfiche Copies of
Periodicals at the Education Library were Refused
April - December 1977

<u>Reason</u> *	<u>Total Response</u>	<u>% of Response</u>
1	136	18
2	89	12
3	149	20
4	142	20
5	152	20
6	56	7
7	28	4
Total	758	100

*See Table 4

TABLE 6
Comments on questionnaire
on issuing microfiche
from Reserve Desk at the
Education Library
April-December 1977

<u>Comment</u>	<u>Rejected fiche</u>	<u>Used fiche</u>
Unfamiliar with reader or microfiche	4	
Requested title in error	4	
Prefer paper	4	2
Hurts eyes	3	2
Want to make own copies	2	
Want to see one page only	1	
Hard to read	3	
Poor study environment		2
Directions confusing (on readers)		2
Readers inadequate		2
Too expensive to make copies		1
Total	21	11

often cited were:

1. Too troublesome to use microfiche reader.
2. Inconvenient for my study habits.
3. Too time consuming to use.
4. Intends to make copy from paper issue.

The first of these reasons could probably be alleviated for some if there were a more efficient use of space for microformat use. Although the environment is one of the best provided for microformat use within the Library System, improvements are still possible. For example, writing space is not always adequate at all readers. The lighting is less than satisfactory at some readers. The other three reasons for rejecting the microfiche are related to a person's use habits rather than to any inherent quality in the format and organization of material for distribution.

Of the 2700 requests for a title which resulted in a microfiche being supplied only 32 understandable written responses were made. One third of these responses were made by individuals who used the microfiche. (See Table 6.) There were seven written responses supplied by those who refused to use the microfiche which were illegible or which made no sense given the conditions of the study, for example, "Fiche missing," or "Article missing." In essence the written responses given under "Other" of the questionnaire could be within one of those responses offered for check off. They can be considered to be somewhat more specific. Five individuals reported the reader hurt their eyes, rather than checking that the microfiche was for them difficult to read. Six individuals who used the microfiche felt compelled to report the environment for use was less than adequate in that directions for using readers were confusing or that the readers were not suitable. Little was added to the study by giving the users the opportunity to express themselves in their own words.

There were 56 times when a microfiche copy was refused in which the person had previously refused. How many different individuals this repre-

sents is unknown. Further, how many persons refused once and later acquired fiche were not identified. There is no way to determine from the data if some users' attitudes were changed because of this study.

DISCUSSION AND CONCLUSION

The study could not have been undertaken without enthusiastic support of the staff at the reserve desk. Enthusiastic is not just rhetoric. At the beginning a great deal of time had to be used and patience exercised to explain the study to users. If the entire periodical reserve collection were on fiche and was confined to only the current year, the distribution would probably take no more staff time than it does in distributing the paper copies. However, during the study an additional 55 hours per week of staff were assigned to the reserve desk to explain the questionnaire when needed and to help users prepare work order forms to obtain either a paper or a fiche copy.

Additional readers were found to be necessary as would be expected. It appeared desirable to have the readers very close to or right at the distribution point. There were a sufficient number of instances where the microfiche was scanned and found not to contain the information sought or expected. As it has been found in many other studies, an important aspect of the acceptance of microformat is convenience of access, rather than the material format or the need to use equipment. During the period of study six portable microfiche readers were made available for out of building use. There is no indication that this new "service" had any effect on this study, but given time and dependable service, the number of requests for a fiche to fiche copy may indeed increase.

An important aspect of the study was a dependable on demand mediated copying service from the microfiche to good quality paper. The Xerox 970 is much too expensive a machine for an on demand service where the copying requested is for a few frames from a microfiche. It is designed to make multiple copies from standardized microfiche. For this study the Xerox 970 demonstrated it was a sturdy instrument and provided high quality copy

appreciated by the library users, but some less expensive device will be necessary to make copy if a "service" as given in this study is provided. It should be noted that the mediated copying service was available 60 out of 79 hours per week the Education Library was open. It caused complications to users when the service was closed because they were required to return to pick up copied material or depend upon the U.S. mail for delivery.

This study indicates that journal issues in microfiche form are an acceptable way for libraries to preserve that part of the scholarly record, at least if the patterns are like those of the Education Library at Wayne State University. Since one third of the requests for journals which were supplied in microfiche format generated an order for a paper copy, it is also evident that a copy service must be available. In this study a mediated service was provided that was no more expensive than the self service paper to paper service. How much users would be willing to pay for a mediated service was not examined. What is apparent is that library users can be taught how to use different formats and to use different procedures in using source materials as current journals. While one can argue that it is unsuitable to increase the cost of copying service, cost in itself should probably not be the sole consideration in the design of any service. Dependable quality service for the most part is more acceptable than cheaper service of less quality or dependability.

The conclusions of Holmes' and Green's studies referred to earlier appear to be confirmed. Given an adequate environment, both attitudinal and physical, microformat is as acceptable as a paper format to library users who are accustomed to a "closed stack" library service. One reason that might be proffered for the acceptance of microformat for currently published material in place of the usual paper format has been the introduction of facsimile copying. The cost of copying has been reduced to the point where individuals apparently feel the convenience of owning a copy is preferable to the less expensive studying in a library. No doubt it would be possible to set a library environment with no copying service where users would have no choice except to use microformats.

This, however, would seem to be ignoring the constructive effect technology can have on academic habits. The time does not appear to be too distant when fiche copies will be made in the same way that paper copies were made in academic libraries. No conclusive data were collected from this study on the fiche to fiche copying and the possible effect lending portable fiche readers might have on scholarly habits other than to indicate acceptance by some.

Not only do archival research libraries have less of an argument for maintaining the content of the scholarly record of journals in a paper format, but publishers may find microformat suitable for distributing the content of scholarly journals. Libraries can change the behavior of their users.

ACKNOWLEDGMENTS

Without the leadership and continued interest of Mr. Theodore Mannheim and the Reference Librarians of the Education Library the project could not have been undertaken and completed. The patience and the care of the Education Library Reserve Desk Assistants in explaining the project and its procedures was a major factor in the successful collection of data and above all for the continuity of document access under changed conditions. Ms. J. Pullan organized and maintained the copy service, a key part of the project.

Mr. R. Griffith McDonald, University Microfilm, Int., brought the basic plan of the project to the Library System. Obviously without his support the project would never have even begun.

The one person who demonstrated not only interest, but encouragement, was Mr. Larry Dusseau, then of Xerox Corporation. He made a Xerox 970 available to the project by manipulating and cajoling an industrial bureaucracy. His concern for the project was total since he made himself available any time of the day or week to deal with the technical problems or to help in the promotion of the project.

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APPENDIX I
SURVEY ANNOUNCEMENT

A Study of the Usefulness of
JOURNALS ON MICROFICHE

You have in hand a microfiche copy of one of the journal titles being used as part of a study sample.

You may examine this microfiche quickly on a viewer at the west end of the desk...

You may order paper copies of articles in this journal and pick them up within 24 hours.

You may purchase copies of the whole microfiche at 50¢ per fiche on demand.

You may make paper copies at the microfiche reader for 10¢ per exposure (usually two pages per exposure).

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